THE CLAIMS:

1. (Currently Amended) A device for treatment of a gas flow, said device comprising:

at least one body (3) configured to cause a conversion in the composition of a gas flow during operation of the device, said body (3) having a modular construction comprising a plurality of sections (26, 26', 27, 27', 36), each with different internal structures that allow gas to flow therethrough, said sections (26, 26', 27,27', 36) being arranged so that at least a portion of the gas flows through at least two sections, each of said sections having different internal structures that form gas flow passages (11a, 11b) and at least one of said sections (26, 26', 27, 27', 36) comprising an internal cavity (20) extending substantially parallel to the gas flow passages (11a, 11b) of that section and which are distributed around said internal cavity (20), wherein the body (3) comprises at least one first section (27) that is provided with a plurality of gas flow passages (11) that extend essentially parallel to each other and wherein the body (3) is arranged to permit heat exchange between gas flows in adjacent gas flow passages (11) and said device being arranged so that the main direction of the gas flow in one gas flow passage (11) is essentially the opposite of the main direction of the gas flow in an adjacent gas flow passage (11) during operation of the device.

2. (Original) The device as recited in claim 1, wherein at least one of said sections (26, 26', 27, 27', 36) exhibits a substantially unchanged cross section along a longitudinal axis thereof.

3. (Original) A device as recited in claim 1, wherein said sections (26, 26', 27, 27', 36) substantially are made out of a ceramic material.

4. (Cancelled)

5. (Currently Amended) A device as recited in claim 4, wherein ~~the body (3) comprises at least one second section (26) that is provided with a plurality of gas flow passages (11) that extend essentially parallel to each other,~~ said plurality of gas flow passages (11) per cross section area unit differs between the first section (27) and the second section (26).

6. (Original) A device as recited in claim 5, wherein the first and the second sections (26, 27) are arranged so that at least a portion of the walls that define the gas flow passages (11) in the first section (27) form extensions of at least a portion of the walls that define the gas flow passages (11) in the second section (26).

7. (Cancelled)

8. (Cancelled)

9. (Currently Amended) A device as recited in claim 1, wherein gas flow passages (11) form inlet passages (11a) that are intended for an incoming gas flow and outlet passages (11b) that are intended for an outgoing gas flow, and that a reversing zone (13) is arranged in connection with said first section (27) so that gas entering said reversing zone (13) from the inlet passages (11a) is permitted to change direction and flow back through the outlet passages (11b).

10. (Original) A device as recited in claim 9, wherein the reversing zone (13) comprises a reversing chamber (13).

11. (Original) A device as recited in claim 9, wherein the body (3) comprises at least one second section (26, 26') that is provided with at least one first opening (4') for the entrance of an incoming gas flow, and that said second section (26, 26') is arranged in connection to at least one first section (27, 27'), and that said second section (26, 26') is adapted to distribute the incoming gas flow to the said inlet passages (11a).

12. (Original) A device as recited in claim 11, wherein said second section (26, 26') is provided with at least one second opening (5') for the exit of an outgoing gas flow, and that said second section (26, 26') is adapted to lead the outgoing gas flow out from said outlet passages (11b).

13. (Previously Presented) A device for treatment of a gas flow, said device comprising:

at least one body (3) configured to cause a conversion in the composition of a gas flow, said body (3) having a modular construction comprising a plurality of sections (26, 26', 27, 27', 36), each with different internal structures that allow gas to flow therethrough, said sections (26, 26', 27,27', 36) being arranged so that at least a portion of the gas flows through at least two sections with different internal structures during operation of the device;

said body (3) comprises at least one first section (27) that is provided with a plurality of gas flow passages (11) that extend essentially parallel to each other and said body (3) is arranged to permit heat exchange between gas flows in adjacent gas flow passages (11);

gas flow passages (11) form inlet passages (11a) that are intended for an incoming gas flow and outlet passages (11b) that are intended for an outgoing gas flow, and that a reversing zone (13) is arranged in connection with said first section (27) so that gas entering said reversing zone (13) from the inlet passages (11a) is permitted to change direction and flow back through the outlet passages (11b); and

said body (3) comprises at least one second section (26, 26') that is provided with at least one first opening (4') for the entrance of an incoming gas flow, and that said second section (26, 26') is arranged in connection to at least one first section (27, 27'), and that said second section (26, 26') is adapted to distribute the incoming gas flow to the said inlet passages (11a), wherein the second section (26) comprises a wall structure forming: at least one first channel (29) to which the incoming gas flow is fed; and a plurality of second channels (30) that extend from said first channel (29) and which second channels (30) are open to said inlet passages (11a).

14. (Original) A device as recited in claim 13, wherein said first channel (29) is closed to the gas flow passages (11a, 11b).

15. (Previously Presented) A device as recited in claim 13, wherein the wall structure forms a plurality of third channels (32) that are open to said outlet passages (11b) and said third channels (32) are formed between said second channels (30) using common walls.

16. (Previously Presented) A device for treatment of a gas flow, said device comprising:

at least one body (3) configured to cause a conversion in the composition of a gas flow, said body (3) having a modular construction comprising a plurality of sections (26, 26', 27, 27', 36), each with different internal structures that allow gas to flow therethrough, said sections (26, 26', 27,27', 36) being arranged so that at least a portion of the gas flows through at least two sections with different internal structures during operation of the device;

said body (3) comprises at least one first section (27) that is provided with a plurality of gas flow passages (11) that extend essentially parallel to each other and said body (3) is arranged to permit heat exchange between gas flows in adjacent gas flow passages (11);

gas flow passages (11) form inlet passages (11a) that are intended for an incoming gas flow and outlet passages (11b) that are intended for an outgoing gas flow, and that a reversing zone (13) is arranged in connection with said first section (27) so that gas entering said reversing zone (13) from the inlet passages (11a) is permitted to change direction and flow back through the outlet passages (11b);

said body (3) comprises at least one second section (26, 26') that is provided with at least one first opening (4') for the entrance of an incoming gas flow, and that said second section (26, 26') is arranged in connection to at least one first section (27, 27'), and that said second section (26, 26') is adapted to distribute the incoming gas flow to the said inlet passages (11a); and

said second section (26, 26') is provided with at least one second opening (5') for the exit of an outgoing gas flow, and that said second section (26, 26') is adapted to lead the outgoing gas flow out from said outlet passages (11b), wherein the second section (26') comprises a zigzag shaped wall structure forming a first and a second set of channels (40,41), one set on each side of said zigzag shaped structure, wherein said first set of channels (40) are open to said inlet passages (18a) and said second set of channels (41) are open to said outlet passages (11b), and wherein the incoming gas flow is fed to the first set of channels (40).

17. (Previously Presented) A device for treatment of a gas flow, said device comprising:

at least one body (3) configured to cause a conversion in the composition of a gas flow, said body (3) having a modular construction comprising a plurality of sections (26, 26', 27, 27', 36), each with different internal structures that allow gas to flow therethrough, said sections (26, 26', 27,27', 36) being arranged so that at least a portion of the gas flows through at least two sections with different internal structures during operation of the device;

said body (3) comprises at least one first section (27) that is provided with a plurality of gas flow passages (11) that extend essentially parallel to each other and said body (3) is arranged to permit heat exchange between gas flows in adjacent gas flow passages (11); and

gas flow passages (11) form inlet passages (11a) that are intended for an incoming gas flow and outlet passages (11b) that are intended for an outgoing gas flow, and that a reversing zone (13) is arranged in connection with said first section (27) so that gas entering said reversing zone (13) from the inlet passages (11a) is permitted to change direction and flow back through the outlet passages (11b), wherein said first section (27, 27') comprises an internal cavity (20) that extends substantially parallel to said gas flow passages (11a, 11b), and that said gas flow passages (11a, 11b) are distributed around said internal cavity (20).

18. (Previously Presented) A device for treatment of a gas flow, said device comprising:

at least one body (3) configured to cause a conversion in the composition of a gas flow, said body (3) having a modular construction comprising a plurality of sections (26, 26', 27, 27', 36), each with different internal structures that allow gas to flow therethrough, said sections (26, 26', 27,27', 36) being arranged so that at least a portion of the gas flows through at least two sections with different internal structures during operation of the device;

said body (3) comprises at least one first section (27) that is provided with a plurality of gas flow passages (11) that extend essentially parallel to each other and said body (3) is arranged to permit heat exchange between gas flows in adjacent gas flow passages (11);

gas flow passages (11) form inlet passages (11a) that are intended for an incoming gas flow and outlet passages (11b) that are intended for an outgoing gas flow, and that a reversing zone (13) is arranged in connection with said first section (27) so that gas entering said reversing zone (13) from the inlet passages (11a) is permitted to change direction and flow back through the outlet passages (11b); and

said body (3) comprises at least one second section (26, 26') that is provided with at least one first opening (4') for the entrance of an incoming gas flow, and that said second section (26, 26') is arranged in connection to at least one first section (27, 27'), and that said second section (26, 26') is adapted to distribute the incoming gas flow to the said inlet passages (11a), wherein said second section (26, 26') comprises an internal cavity (20), and that at least one first or second opening (4', 5') is directed towards said cavity (20) so that gas flow via said cavity (20) during operation of the device.

19. (Previously Presented) A device for treatment of a gas flow, said device comprising:

at least one body (3) configured to cause a conversion in the composition of a gas flow, said body (3) having a modular construction comprising a plurality of sections (26, 26', 27, 27', 36), each with different internal structures that allow gas to flow therethrough, said sections (26, 26', 27,27', 36) being arranged so that at least a portion of the gas flows through at least two sections with different internal structures during operation of the device; and

said body (3) comprises at least one first section (27) that is provided with a plurality of gas flow passages (11) that extend essentially parallel to each other and said body (3) is arranged to permit heat exchange between gas flows in adjacent gas flow passages (11), wherein the body (3) has a substantially cylindrical shape, and said body (3) comprising an internal cavity (20) that extends in the longitudinal direction of the body (20), and that the device is arranged in such a way that at least one of (i) incoming gas enters the body (3) via said internal cavity (20) and (ii) outgoing gas exits the body (3) via said internal cavity (20) during operation of the device.

20. (Previously Presented) A device for treatment of a gas flow, said device comprising:

at least one body (3) configured to cause a conversion in the composition of a gas flow, said body (3) having a modular construction comprising a plurality of sections (26, 26', 27, 27', 36), each with different internal structures that allow gas to flow therethrough, said sections (26, 26', 27,27', 36) being arranged so that at least a portion of the gas flows through at least two sections with different internal structures during operation of the device;

said body (3) comprises at least one first section (27) that is provided with a plurality of gas flow passages (11) that extend essentially parallel to each other and said body (3) is arranged to permit heat exchange between gas flows in adjacent gas flow passages (11); and

gas flow passages (11) form inlet passages (11a) that are intended for an incoming gas flow and outlet passages (11b) that are intended for an outgoing gas flow, and that a reversing zone (13) is arranged in connection with said first section (27) so that gas entering said reversing zone (13) from the inlet passages (11a) is permitted to change direction and flow back through the outlet passages (11b), wherein the body (3) comprises at least one third section (36) provided with walls (39) that are permeable to the gas flow, said third section (36) being primarily adapted to remove particulates from the gas.

21. (Original) A device as recited in claim 20, wherein the third section (36) is arranged between the first section (27, 27') and the reversing chamber (13), and that said permeable walls (39) essentially defines an extension of the gas flow passages (11a, 11b) in the first section, and that the outlet passages (11b) are closed to the reversing chamber (13) so that the gas is forced to flow through said permeable walls (39) during operation of the device.

22. (Original) A device as recited in claim 1, wherein at least a part of the surfaces in the body (3) that are in contact with the gas flow are coated with a catalyst material.

23. (Original) A device as recited in claim 1, wherein at least a part of the surfaces in the body (3) that are in contact with the gas flow are coated with an adsorption/desorption agent.

24. (Original) A device as recited in claim 1, further comprising means for controlling the temperature of the gas flow in the body (3), said means comprising at least one of: (i) a heat generator arranged in, or in connection to, the body (3); (ii) cooling flanges arranged in, or in connection to, the body (3); (iii) arrangements for introducing cooling air into the body (3); and (iv) a system for controlling the composition of the incoming gas flow.

25. (Previously Presented) A device as recited in claim 24, wherein said system for controlling the composition of the incoming gas flow comprises at least one of the following: (i) an arrangement for introduction of oxidizing species into the incoming gas flow; and (ii) an arrangement for introduction of oxidizable species into the incoming gas flow.

26. (Original) A device as recited in claim 24, wherein the device is arranged in connection to a combustion engine, and that said system for controlling the composition of the incoming gas flow comprises an arrangement for controlling the operation of the combustion engine, which operation in turn affects the composition of the incoming gas flow.

27. (Previously Presented) A device as recited in claim 1, wherein the device is adapted to purify the exhaust gas from an internal combustion engine.

28. (Original) A device as recited in claim 2, wherein a plurality of said sections (26, 26', 27, 27', 36) exhibit a substantially unchanged cross section in at least one certain direction.

29. (Previously Presented) A device as recited in claim 3, wherein said sections (26, 26', 27, 27', 36) are joined together by sintering.

30. (Previously Presented) A device as recited in claim 1, wherein said body (3) has a general shape of a circular cylinder.

31. (Original) A device as recited in claim 19, wherein the body (3) has a general shape of a circular cylinder.

32. (Original) A device as recited in claim 1, wherein the device is adapted to purify the exhaust gas from a mobile internal combustion engine.

33. (Previously Presented) A device for treatment of a gas flow, comprising a section (27) for counter-current heat exchange, the section having a plurality of gas flow passages which form inlet passages (11a) for incoming gas and a plurality of gas flow passages which form outlet passages (11b) for outgoing gas, the inlet passages (11a) terminating in a reversing zone (13) and the outlet passages (11b) extending from the reversing zone (13), the reversing zone being arranged for changing the direction of the gas flow from a first direction in the inlet passages to a second direction in the outlet passages, at least a part of the reversing zone (13) being arranged by using gas permeable walls (39) in a portion (36) of the section (27) which walls divide the gas flow passages into said inlet and outlet passages, and said outlet gas passages (11b) being closed to the reversing zone (13) so as to force the incoming gas through the gas permeable walls (39) into the outlet passages (11b) while depositing particles (38) in the reversing zone (13) during operation of the device.

34. (Currently Amended) A device for treatment of a gas flow, comprising at least one first section (27) for counter-current heat exchange, the first section (27) having a plurality of gas flow passages which form inlet passages (11a) for incoming gas and a plurality of gas flow passages which form outlet passages (11b) for outgoing gas, the inlet passages (11a) terminating in a reversing zone (13) and the outlet passages (11b) extending from the reversing zone (13), the reversing zone being arranged for changing the direction of the gas flow from a first direction in the inlet passages to a second direction in the outlet passages, and the device further comprising a second section (26) being provided with at least one first opening (4') for entrance of an incoming gas flow to the second section (26) and at least one second opening (5') for exit of the gas flow from the second section (26), said second section (26) having a plurality of distributing channels (30) arranged for distributing the incoming gas flow to the inlet passages (11a) of the first section (27), and a plurality of collecting channels (32) for collecting the outgoing gas flow from the outlet passages (11b) of the first section (27) and wherein the second section (26) has a ring-shaped cross section forming a cavity (20) inside the device which cavity allows the gas to flow in the longitudinal direction of the device, and said at least one first opening (4') for entrance of an incoming gas flow to the second section (26) being directed towards said cavity (20).

35. (Previously Presented) A device according to claim 34, wherein two said first sections (27) are arranged on opposite sides of the second section (26), the plurality of distributing channels (30) of the second section (26) being arranged for distributing the incoming gas flow to the inlet passages (11a) of both first sections (27), and the plurality of collecting channels (32) of the second section (26) being arranged for collecting the outgoing gas flow from the outlet passages (11b) of both first sections (27).

36. (Cancelled)

37. (Previously Presented) A device according to claim 34, wherein the device is provided with a housing enclosing the first section (27) and the second section (26) such that an outlet channel (35) is formed between the housing and the first and second sections in the periphery of the device, which outlet channel (35) allows the gas to flow in the longitudinal direction of the device, and said at least one second opening (5') for exit of the gas flow from the second section (26) being directed towards said outlet channel (35).